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REMARKS

In paragraphs 1 and 2 of the Office Action claims 23 to 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Chang et al (U.S. 6,584,676), stating:

> "Chang discloses poles P1 and P2 (604 and 606) with poles made to have sharp corners where ion milled sides meet a surface coincident with the ABS (notes figures 5A through 6B, column 5 — lines 20 to 22, and column 6 — lines 9 to 11). As to claims 25 and 39, for pole tips formed by ion milling and then trimming appropriate for working thin films and defined as having "distinct" and "sharpened" corners, it is considered that they will inherently exhibit corner radius of curvatures of less than 100 nanometers.
>
> The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131."

Responsive hereto, Applicant has amended independent claim 23 to include limitations previously set forth in dependent claims 24 and 25, and claims 24 and 25 have been cancelled; similarly, Applicant has amended independent claim 28 by inserting limitations previously set forth in dependent claims 29 and 30, and claims 29 and 30 have been cancelled. Applicant respectfully traverses this ground of rejection and asserts that Chang neither teaches nor renders obvious that the P2 pole tip is fabricated to have substantially square edges having corners that substantially define a right angle, where the corners are formed with a radius of curvature from 0.10 nanometers to less than 100 nanometers.

As is taught in Chang, and in the present patent application, the use of an ion milling tool (FIB) creates rounded corners (this significant issue is important in the discussion of Meyer tool that follows). Applicant's solution to avoiding the rounded corners is to first deposit a thin film upon the surface, then to conduct the FIB milling, then to remove the film. Significantly, Chang '676 takes a different approach. Particularly, in Chang the FIB milling creates rounded corners, and this is followed with a polishing process that removes portions of the surface, such that the rounded corners are removed (see Figs. 5C and 5D of Chang '676). There is no discussion in Chang '676 regarding the sharpness of the corners, other than that they are "distinct" and "sharply defined".

There is no discussion in Chang '676 regarding the radius of curvature of the corners, nor the particular range set forth in the claims. Rather, the Office Action declares that Chang '676 will "inherently exhibit" corner radius of curvatures of less than 100 nanometers. Applicant respectfully traverses this assertion as lacking in support and teachings of the cited prior art. In this regard, Applicant notes that the corners of Chang '676 are formed from a different process (polishing) than the present invention, and it is known that that different processes have different characteristics. Applicant submits that there is no teaching nor is it inherent that the polishing process of Chang '676 will yield corners that form substantially right angles and that have a radius of curvature of from 0.10 nanometers to less than 100 nanometers. Chang '676 does not disclose that it is desirable nor even possible to obtain corners within this range, nor is it asserted that the Chang '676 process can achieve such corners.

Applicant therefore respectfully submits that independent claims 1 and 23 recite limitations that are not anticipated by Chang '676. Regarding the remaining dependent claims 26, 27 and 31, 32, Applicant submits that these dependent claims include further limitations that are not anticipated by the cited prior art, and alternatively that these claims are allowable in that they depend either directly or indirectly from an allowable independent base claim.

In paragraph 3 of the Office Action claims 23, 24, 26-29, 31, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Meyer et al (U.S. 6,507,454), stating:

> "Meyer discloses poles P1 and P2 (12 and 14) where ion milled sides meet a surface coincident with the ABS (note figure 1A-1C, column 1 — lines 47 to 64, and column 3 — line 53 to column 4 — line 30). The disclosure that the ion milling forms sharp features and the depiction of sharp pole corners at the ABS are considered adequate to make a rejection under 35 U.S.C. 102(e) appropriate."

In paragraphs 4 and 5 of the Office Action claims 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer et al., stating:

> " Meyer does not disclose the radius of curvature of the corners of the poles at the ABS.
>
> Official Notice is given that a corner of a thin film head structure considered sharp would have a radius of curvature of less than 100 nanometers.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the radius of curvature of the corners of the poles at the ABS be less than 100 nanometers. The motivation would have been: such a dimensional limitation was consistent with what

> a sharp corner was considered to be in the art of thin films and their formation."

Responsive hereto, Applicant has amended independent claims 23 and 28 to include limitations previously set forth in dependent claims 24, 25 and 29, 30 respectively, as discussed hereabove. Applicant respectfully traverses this ground of rejection with regard to the amended independent claims 23 and 28.

Meyer teaches the prior art FIB ion milling process in which rounded corners are produced, as is discussed in the prior art Chang '676 patent, and the prior art portion of the present application. With particular emphasis on the limitations previously set forth in dependent claims 25 and 30, that the corners are formed with a radius of curvature of from 0.10 nanometers to less than 100 nanometers, Applicant traverses the assertion of official notice that it would be obvious to one of ordinary skill in the art. Specifically, one of ordinary skill in the art, in light of the teachings of Chang '676 would know that the Meyer device will have rounded corners. Applicant therefore respectfully submits that amended independent claims 23 and 28 recite limitations that are not obvious from the cited prior art and from any assertion of "Official Notice" based upon the prior art..

Therefore, with regard to the rejections in the Office Action, Applicant submits that the sharp corners having a radius of curvature of from 0.10 nanometers to less than 100 nanometers is not anticipated by any of the references, nor can official notice be taken where the references such as Meyer have demonstrably rounded edges as taught in the prior art.

Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant respectfully submits that the Application is now in condition for allowance. Applicant therefore respectfully requests that a Notice of Allowance be forthcoming at the Examiner's earliest opportunity. Should the Examiner have any questions or comments with regard to this amendment, a telephonic conference at the number set forth below is respectfully requested.

Respectfully submitted,

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February 20, 2007
(date)

Patricia Beil
(Signature of Patricia Beilmann)